

Enrollment No: _____

Exam Seat No: _____

C. U. SHAH UNIVERSITY

Summer Examination-2022

Subject Name: Advances in Materials Science

Subject Code: 5SC04AMS1

Branch: M.Sc. (Physics)

Semester: 4

Date: 05/05/2022

Time: 11:00 To 02:00

Marks: 70

Instructions:

- (1) Use of Programmable calculator and any other electronic instrument is prohibited.
 - (2) Instructions written on main answer book are strictly to be obeyed.
 - (3) Draw neat diagrams and figures (if necessary) at right places.
 - (4) Assume suitable data if needed.
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SECTION – I

- Q-1** **Attempt the Following questions.** **(07)**
- a. Define Phase. **01**
 - b. Write two applications of ceramics. **01**
 - c. Define tie line. **01**
 - d. Give the expression for lever rule. **01**
 - e. Define Eutectic point. **01**
 - f. What do you mean by triple point? **01**
 - g. Name some processing methods used for ceramic preparation. **01**
- Q-2** **Attempt all questions** **(14)**
- a) Write a note on Phase diagram and its importance. **07**
 - b) Discuss Eutectic phase diagram. **07**
- OR**
- Q-2** **Attempt all questions** **(14)**
- a) Explain one component system in details. **07**
 - b) Write a note on classification of ceramics. **07**
- Q-3** **Attempt all questions** **(14)**
- a) Explain in detail Polymers and its types. **07**
 - b) Compare between thermoplastic and thermosetting polymers. **07**
- OR**
- Q-3** a) Discuss the different methods used for Ceramic Material fabrications. **07**
- b) Write the importance of tie line and lever rule while studying a phase diagram. **07**



SECTION – II

- Q-4** **Attempt the Following questions.** **(07)**
- a. Define composites. **01**
 - b. Define elastomers. **01**
 - c. What are Bloch walls? **01**
 - d. Give some examples of paramagnetic materials. **01**
 - e. Differentiate Heteropolymers and Homopolymers. **01**
 - f. What are polymers? **01**
 - g. Define Hysteresis in Magnetic materials. **01**
- Q-5** **Attempt all questions** **(14)**
- a) Explain the working and principle of LEDs. **07**
 - b) Explain in detail Giant Magneto Resistance in detail. **07**
- OR**
- Q-5** a) Enumerate on Ferromagnetism and Paramagnetism in material science. **07**
- b) Explain in detail Ceramic Magnets or Magnetic Ferrites. **07**
- Q-6** **Attempt all questions** **(14)**
- a) Write a note on Shape memory alloys. **07**
 - b) State the importance of Spintronics in shaping the modern world. **07**
- OR**
- Q-6** **Attempt all Questions**
- a) Discuss in detail Garnets and their structure. **07**
 - b) Explain: Diamagnetism in details. **07**

